## REMARKS

Claims 1 through 4 and 8 through 11 are pending in this Application. Claims 1 and 8 have been amended and new claim 11 added. Care has been exercised to avoid the introduction of new matter. Indeed, adequate descriptive support for the present Amendment should be apparent throughout the originally filed disclosure. Applicants submit that the present Amendment does not generate any new matter issue.

**Claims 1, 3, 4, 8 and 10 were rejected under 35 U.S.C. § 102 for lack of novelty as evidenced by JP 10-312735 (Saito).**

In the statement of rejection the Examiner referred to portions of the patent text, asserting the disclosure of a method corresponding to that claimed. This rejection is traversed.

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the identical disclosure in a single reference of each element of a claimed invention, such that the identically claimed invention is placed into the recognized possession of one having ordinary skill in the art. *Dayco Prods., Inc. v. Total Containment, Inc. 329 F.3d 1358, 66 USPQ2d 1801 (Fed. Cir. 2003); Crown Operations International Ltd. v. Solutia Inc., 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002).* There is a fundamental difference between the claimed method and Saito's method that scotches the factual determination that Saito discloses a method identically corresponding to that claimed.

The method defined in **independent claim 1** comprises a sequence of manipulative steps for forming a protrusion on a diamond substrate by etching. The etching step is conducted using a plasma of a mixed gas which includes fluorine (F) within a specific range with respect to the total number of atoms in the mixed gas. This etching technique including a specific F

concentration is designed to form a projection having a side face with an angle of inclination of at least 78 degrees. No such method is disclosed or suggested by Saito.

Indeed, the method disclosed by Saito forms a projection having a conventional shape. The Examiner asserted that Saito discloses a method employing an etching gas having a concentration such that the $O_2$: $CF_4$ ratio is 99.5:0.5. Applicants question the accuracy of the Examiner's determination. Specifically, Saito discloses that the ratio $O_2$: $CF_4$ ranges from 100: 0 to 50:50. In this respect, Applicants would refer to column 6 of Saito, lines 69 through 71, wherein it is disclosed that: "...the ratio of volume fraction of $CF_4$ to the volume fraction of $O_2$ is greater than 0 but not greater than 0.5." In other words, Saito merely discloses that $(CF_4)/(CF_4+ O_2)$ falls in a region up from 0 to 50%.

Saito discloses that a diamond having a normal shape can be formed under the conditions that $(CF_4)/(CF_4+ O_2)$ falls in a region from 0 to 50%; however, Saito neither discloses nor suggests what shape of a diamond may be formed when $(CF_4)/(CF_4+ O_2)$ falls in a region from 0.02 to 3%. But in accordance with the present invention, the concentration region is from 0.02% to 3%, i.e., the F atom concentration ranges from 0.04% to 6%. Under this condition, a specific shape of the diamond is formed. This has never been reported in the prior art. This is not disclosed by Saito. It is not suggested by Saito. The patentability of the claimed invention can not be defeated by what is **unknown** in the prior art.

Applicants emphasis that the present invention is based upon the discovery that a projection having a specific shape, i.e., a side face with an angle of inclination of at least 78 degrees, can be etched on a diamond substrate employing an etching gas having a specific concentration of F atoms with respect to the total number of atoms in the gas mixture, as claimed. This is alien to the applied prior art.

Applicants would further note that Saito does not even disclose or suggest any diamond shape. Accordingly, one having ordinary skill in the art would not have garnered from Saito any disclosure or suggestion regarding the correlation between the shape of any protrusion and the concentration of F atoms with respect to the total number of atoms in the gas mixture.

**Independent claim 8** is directed to a method of making a diamond product by etching with a gas mixture having a specified emission spectrum. The Examiner asserted that claim 8 requires the ratio of atomic oxygen to molecular oxygen to be greater than it would otherwise be in a pure oxygen plasma. The Examiner then stated it is a well-established principal, based upon the cited IBM Technical Disclosure Bulletin (IBM), that the ratio of atomic oxygen to molecular oxygen increases when fluorine is added to an oxygen plasma.

However, neither the actual relied upon reference to Saito or mentioned IBM reference discloses or suggests the specific relationship between the intensity of emission peaks of oxygen atoms in the mixture gas and oxygen in the mixture gas with respect to the intensity ratio obtained from an emission of a plasma which is 100% oxygen.

In addition, it is not apparent and the Examiner has not identified wherein the applied prior art discloses or suggests the relationship between the spectrum-analysis of the mixture gas employed and etching a diamond to form a specific shape. Applicants would stress that the Examiner has not referred to any objective evidence that discloses what impact the addition of $CF_4$, etc., may or may not have when etching diamond.

The above argued differences between the claimed methods and Saito's method undermines the factual determination that Saito discloses a method identically corresponding to

those defined in independent claims 1 and 8, and claims dependent thereon. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc., 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986).* Applicants, therefore, submit that the imposed rejection of claims 1, 3, 4, 8 and 10 under 35 U.S.C. § 102 for lack of novelty as evidenced by Saito is not factually viable and, hence, solicit withdrawal thereof.

**Claim 2 was rejected under 35 U.S.C. § 103 for obviousness predicated upon Saito.**

**Claim 9 was rejected under 35 U.S.C. § 103 for obviousness predicated upon Saito in view of IBM.**

Each of the above rejections under 35 U.S.C. § 103 is traversed. Specifically, claim 2 depends from claim 1 and claim 9 depends from claim 8. Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claims 1 and 8 under 35 U.S.C. § 102 for lack of novelty as evidenced by Saito. The Examiner's additional comments with respect to claim 2 and the secondary reference to IBM does not cure the argued deficiencies of Saito.

Applicants, therefore, submit that the imposed rejection of claim 2 under 35 U.S.C. § 103 for obviousness predicated upon Saito, and the imposed rejection of claim 9 under 35 U.S.C. § 103 for obviousness predicated upon Saito in view of IBM, are not factual or legally viable and, hence, solicit withdrawal thereof.

**Claim 11**

Claim 11 is clearly free of the applied prior art by virtue of the limitations expressed therein. In this respect, Applicants would note that claim 11 is directed to a method which comprises etching a diamond substrate to form a recess having a side face with an angle of inclination of at least 78 degrees, employing a mixed gas composed of a specific F concentration. No such method is disclosed or suggested by the references relied upon by the Examiner. Accordingly, claim 11 is free of the applied prior art.

Based upon the foregoing it should be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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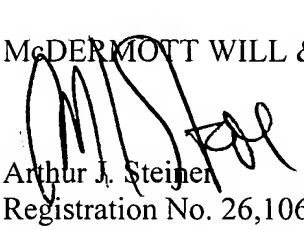

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